independent Claim 4 relative to the amount of pigment employed in the ink-receiving layer of the claimed invention. The Examiner indicated that this phrase renders the claim indefinite and suggested that the term "about" be removed. This position is strongly and respectfully traversed. The terms "about" and "at least about" involve well-established terminology that has long been considered acceptable by both the U.S. Patent and Trademark Office ("USPTO") and the courts (including the Court of Appeals for the Federal Circuit ["CAFC"]). Thousands of patents have issued using the term "about", with this terminology being entirely acceptable in Claim 4 and supported by applicable legal guidelines as discussed in detail below.

Regarding this issue, the Examiner's attention is respectfully directed to W.L. Gore & Associates Inc. v. Garlock Inc., 220 USPQ 303 (Fed. Cir. 1983) which specifically involved a claim limitation having the term "about" therein (e.g. "about 100% per second" with particular reference to a stretching process used to make tape products). In the W.L. Gore case, the CAFC did not indicate in any fashion that the use of "about" was improper. Instead, the CAFC concluded that the foregoing phrase was acceptable under 35 U.S.C. 112.

Another important case concerning the use of "about" is Eiselstein v. Frank, 34 USPQ 2d 1467 (Fed. Cir. 1995) which discussed the employment of this term in a claimed range covering metal alloy compositions. Again, this terminology was not considered to be improper or indefinite by the CAFC. Instead, it was indicated by the CAFC that: "The meaning of the word 'about' is dependent on the facts of a case, the nature of the invention, and the knowledge imparted by the totality of the earlier disclosure to those skilled in the art". (34 USPQ at 1471 citing In re Wertheim, 191 USPQ at 96). This statement does not imply or suggest in any fashion that the use of "about" in a patent claim is per se improper or invalid, thereby supporting Applicants' employment of this terminology in Claim 4 of the present application.

Also of relevance is the U.S. Supreme Court case of Warner-Jenkinson Company, Inc. v. Hilton Davis Chemical Co., 41 USPQ 2d 1865 (S. Ct. 1997). This decision involved a chemical process in which the claimed method was modified during prosecution to include a numerical pH range. Specifically, an ultrafiltration procedure for the separation of impurities in dyes was claimed, with a limitation being added during prosecution which stated that the pH of the solution under consideration was "from approximately 6.0 - 9.0". A key issue in the case involved a determination as to whether a competing process (which operated at a pH of 5) was "equivalent" to the claimed process (which recited a pH of "approximately 6.0 - 9.0") under the

Doctrine of Equivalents. Regarding the use of "approximately" in the claim (which is equivalent to "about"), the U.S. Supreme Court did not question the validity of this term or indicate in any manner that it was improper. It is therefore appropriate to conclude that the use of "approximately" was considered to be entirely acceptable by the U.S. Supreme Court. This situation provides even further support for Applicants' position that "at least about 65%" is not indefinite and satisfies the requirements of 35 U.S.C. 112.

It should also be noted that the use of "about" is explicitly discussed in the Manual of Patent Examining Procedure ("MPEP") Section 2173.05(b). This portion of the MPEP cites various cases which support the recitation of "about" in patent claims. For example, in MPEP Section 2173.05(b), Ex parte Eastwood, 163 USPQ 316 (Bd. App. 1968) is discussed. This case involved a patent claim which employed the term "about" to define the area of a mold (particularly the lower end). The claim specifically stated that the area of the lower end was "between 25 to about 45% of the mold entrance". In the Eastwood case, the use of "about" was held to be entirely acceptable. Specifically, the Board indicated as follows:

> The descriptive word "about" is **not indefinite** as argued by the examiner. Its meaning is not as broad and arbitrary as contended by the examiner. Rather, the term is **clear but flexible** and is deemed to be similar in meaning to terms such as "approximately" or "nearly". (163 USPQ at 317 - emphasis added).

Applicants cannot see any distinction between this well-established case and the current situation regarding Claim 4, with the Eastwood decision fully supporting the allowability of Claim 4. Incidentally, MPEP Section 2173.05(b) also cites the W.L. Gore & Associates, Inc. v. Garlock, Inc., supra, case discussed above.

It is noted, however, that MPEP Section 2173.05(b) mentions the case of Amgen, Inc. v. Chugai Pharmaceutical Co., 18 USPQ 2d 1016 (Fed. Cir. 1991). This is the sole decision provided in MPEP Section 2173.05(b) that rejected the use of "at least about" in a patent claim. It is believed that the Examiner's rejection of "at least about 65%" in Claim 4 was based on this decision. However, some critical and undeniable distinctions exist between Amgen and the current situation involving Claim 4 which will now be discussed.

First, an important factor to consider is the technical field associated with the invention of Claim 4 compared with the Amgen case. Claim 4 specifically covers print media technology, namely, media sheets made of paper and the like which are employed in printers. In other words,

the invention of Claim 4 involves coated, printable sheets for thermal inkjet printers and the like. This area of technology is **entirely distinguishable** from the technical field associated with the Amgen case which involves **extremely complex biotechnology** as will now be discussed.

It is self-evident and well-recognized that there are significant levels of inherent uncertainty in complex biotechnology inventions which sets them apart from other technologies (including the print media product of Claim 4). The "at least about" language in Amgen involved an erythropoietin (EPO) composition which (according to the decision) is "a protein consisting of 165 amino acids which stimulates the production of red blood cells" and is a "useful therapeutic agent in the treatment of anemias or blood disorders". (18 USPQ 2d at 1018). The claim under consideration in this discussion indicated that the erythropoietin had a "specific activity of at least about 160,000 IU per absorbance unit at 280 nanometers". This particular characteristic (e.g. "specific activity") was evidently of a type that was determined using a certain "bioassay process". Regarding this particular process, the district court concluded that "bioassays provide an **imprecise** form of measurement with a range of **error**." (18 USPQ at 1030 - emphasis added). Accordingly, the court clearly recognized that bioassays have inherent limitations and degrees of imprecision.

The district court further stated that, in addition to the imprecise nature of the bioassay under consideration, the claimed parameter itself was characterized by an "inherent" degree of error. (18 USPQ at 1030). These particular factors (namely, the uncertainties associated with the technology of concern) were not disputed or reversed by the CAFC. In accordance with this situation, it was concluded by the CAFC that the use of "about" in connection with the claimed "specific activity" level would not be appropriate. This position was based on the inherent technological uncertainties associated with the "specific activity" parameter as outlined above. In reaching its decision, the following statement was provided by the CAFC concerning the issues expressed above:

> The district court found that **"bioassays provide an imprecise form of measurement with a range of error"** and that use of the term "about" 160,000 IU/AU, **coupled with the range of error already inherent in the specific activity limitation**, served neither to distinguish the invention over the close prior art (which described preparations of 120,000 IU/AU), nor to permit one to know what specific activity values below 160,000, if any, might constitute infringement. (emphasis added - 18 USPQ 2d at 1030).

In other words, the highly complex and inherently imprecise nature of the biotechnology involved in the Amgen case supported a conclusion that the use of "about" in the **isolated factual situation** set forth above was simply not acceptable.

It is entirely clear that the facts and circumstances associated with the Amgen case are totally distinguishable from the situation involving Claim 4 of the present application with particular reference to "at least about 65%" in the claim. Claim 4 does not involve complex, unpredictable, and inherently imprecise biotechnology or bioassay techniques. Instead, it covers a coated media product for printing purposes and the amount of pigment which is used in the product. This quantity can be precisely measured by modern processing equipment. Likewise, the quantity of pigment in a coating is not even remotely comparable to the "specific activity" of an erythropoietin. There is nothing inherently unpredictable or imprecise regarding print media products, coating weights, and material content measurements of the type at issue in Claim 4. They are clearly and readily characterized and, in this regard, cannot be compared with the technology in Amgen.

It should also be noted that, in the Amgen decision, the word "about" was apparently not provided in the claim as originally filed, but was later added. The original claim initially stated that the "specific activity" parameter was "at least 120,000" which was rejected by the Examiner based on a prior art reference that disclosed a "specific activity" value of 128,620. In response, the prosecuting attorneys amended the claim to recite "at least about 160,000" in order to overcome this reference while, at the same time, preserving a margin of variation for claim-coverage purposes. The district court objected to this approach and concluded that the addition of "about" in the claim seemed to involve (according to the court) an "effort to recapture" a range of values between 120,000 (which the Examiner had rejected based on prior art) and 160,000 which had already been allowed in other claims in the application. In other words, the court apparently believed that "about" had been added in an attempt to recapture subject matter that had previously been rejected by the Examiner.

These unusual circumstances are totally absent in the present case, with the term "about" having been presented in Claim 4 as originally filed. No attempts have been made to add this word after-the-fact. Likewise, as stated above, Applicants' Claim 4 does not cover an imprecise biotechnological invention. On this basis, the use of "at least about" in Claim 4 is completely distinguishable from Amgen in many ways, with the Amgen case not being applicable in the

present application.

Furthermore, the Amgen case should be considered a **very narrow holding** which is entirely inapplicable to Claim 4 as previously stated. In fact, the CAFC in Amgen was extraordinarily careful to emphasize that its holding regarding the use of "about" was limited and **specific to the facts at issue in Amgen.** In particular, it made the following statement concerning this issue which is highly relevant:

> We also note that, in view of our reversal of the district court's holding that claims 1 and 3 are valid, it is clear that **claims 4 and 6 would also be invalid without the "about" limitation**. In arriving at this conclusion, **we caution that our holding that the term "about" renders indefinite claims 4 and 6 should not be understood as ruling out any and all uses of this term in patent claims. It may be acceptable in appropriate fact situations**... (emphasis added - 18 USPQ 2d at 1031).

It is therefore self-evident that the holding in Amgen is strictly limited to the facts of that case which again involve complex, imprecise, and inherently unpredictable biotechnology. Claim 4 does not even remotely encompass biotechnology but instead covers print media products as stated above. Accordingly, the Amgen decision is **totally inapplicable** to the present application.

Applicants' use of "about" from a terminology-standpoint is no different from the employment of this term in the Eastwood, W.L. Gore, Warner-Jenkinson, and Eiselstein cases which clearly support Applicants' position. Applicants are fully entitled to operate within the confines of these cases and should be not be subject to any kind of "blanket" prohibition against its use of "about". For these reasons and the others given above, the "at least about" terminology set forth in Claim 4 is clearly acceptable under all applicable guidelines (including those associated with 35 U.S.C. 112 [Second Paragraph]) and is entitled to approval.

Finally, Applicants wish to respectfully bring certain facts to the Examiner's attention in support of their position. Attached as Exhibit A is a copy of a computer print-out from the USPTO web site in which a search was conducted involving the use of "at least about" in patent claims. In accordance with this search (conducted on 7/9/03), **55,594 patents** from 1976 to date were located which contain the phrase "at least about" in at least one claim. The information in Exhibit A provides undeniable and overwhelming evidence of the appropriate nature of "at least about" in patent claims. If "at least about" was permitted in 55,594 patents as per Exhibit A, then

it is certainly allowable in this case (especially since no biotechnology or other inherently imprecise technologies are involved). Any other determination would be totally inconsistent with USPTO policy.

Also respectfully submitted for consideration is the fact that the Examiner, himself, has previously approved the use of "at least about" language in numerous patents within the same technical field as Claim 4. The following patents were all handled by the Examiner and contain at least one claim which includes the phrase "at least about" (note the cited and highlighted portions of the claims):

1. U.S. Patent No. 6,086,985 (Exhibit B) - See Col. 12 (lines 7 - 8) which states in Claim 11 that the claimed filler particles in an ink jet "recording element" are "at least about 50% by weight siliceous particles". This is directly comparable (terminology-wise) to Applicants' "at least about 65%" language involving the amount of pigment in the claimed product;

2. U.S. Patent No. 6,096,443 (Exhibit C) - See Col. 24 (lines 26 - 29) which recites in Claim 20 a "coated transparency" comprised of a substrate with "at least about four layers, at least about two layers on one surface substrate and at least about two layers on the second surface substrate". In this claim, "at least about" language was employed (and approved) not less than 3 times;

3. U.S. Patent No. 6,231,953 (Exhibit D) - See Claim 13 at Col. 14 (lines 61 - 63) which covers a "printed film" having an "oxygen permeance of at least about 1000 $cm^3/m^2 \cdot atm \cdot 24$ hours";

4. U.S. Patent No. 6,265,053 (Exhibit E) - In Claim 1 (which involves an "ink jet printable heat transfer material"), it is stated at Col. 18 (lines 15 - 16) that the "second layer" associated with the product has a "basis weight of at least about 10 grams per square meter". This statement is again directly comparable (terminology-wise) to Applicants' "at least about 65% by weight" language involving the amount of pigment in the media product of Claim 4;

5. U.S. Patent No. 6,440,539 (Exhibit F) - Claim 4 of this patent covers an "ink jet printing method", with this claim stating that the "polymeric core" composition employed in the method is "cross-linked to a degree of crosslinking of at least about 27 mole %" (Col. 7 [lines 22 - 23]); and

6. U.S. Patent No. 6,464,351 (Exhibit G) - In accordance with Claim 1 of the above-listed patent, an "ink-jet printing method" is disclosed which employs a coated media product, with the coating containing "at least about 25% by weight" of a "water-absorbent polymer" (Col. 12 [lines 34 - 35]). This situation is also analogous (terminology-wise) to the current situation associated with Claim 4 which likewise involves the use of "at least about" in defining the weight of a particular ingredient.

In each of these issued patents (which are all quite recent), "at least about" language is employed in one or more of the claims. This language is being used in a manner which is virtually indistinguishable from a terminology-standpoint compared with the language in Claim 4 of the present application. Likewise, as previously indicated, all of the foregoing patents are in the same technical field as the present invention (media products and methods). Accordingly, a distinction cannot be made between Applicants' use of "at least about" in Claim 4 compared with the employment of this terminology in the above-cited patents. Certainly, if this language was considered to be acceptable by the Examiner in these patents (which it was), then it is equally acceptable in Claim 4. Any other determination would not only contradict established case law and administrative guidelines, but would be entirely inconsistent with all of the patents listed above including the 55,594 patents in which "at least about" appears.

As a final point regarding the use of "about" by Applicants in Claim 4, attached as Exhibit H is a list of patents allowed by the Examiner in which "about" appears in at least one of the claims. This list (which was again obtained from the USPTO web site on 7/9/03) recites not less than **54** patents and provides even further support for the allowance of Claim 4.

Based on the information provided above, it is strongly and respectfully submitted that Claim 4 in its original form is entirely compliant with 35 U.S.C. 112 in all respects, with any decision to the contrary not withstanding appellate review. Should the Examiner have any questions concerning this issue, he is invited contact the undersigned at any time.

II. Claim Rejections Under 35 U.S.C. 103(a)

****CLAIM 4****

Claim 4 was rejected in the current Office Action under 35 U.S.C. 103(a) in view of U.S. Patent No. 6,419,355 to Bermel et al. (hereinafter "Bermel et al.") This position is strongly and respectfully traversed for the reasons given below which clearly support the allowance of Claim 4.

Accompanying this Amendment is a document entitled **"DECLARATION UNDER 37 C.F.R. §1.131"** (hereinafter "the Declaration"). In accordance with the foregoing Declaration, Applicants have successfully "sworn behind" Bermel et al. as will now be discussed.

First, the issue date of the Bermel et al. reference (July 16, 2002) is not more than one (1) year prior to the filing date of the current application (August 30, 2001). Instead, the issue date of Bermel et al. is **later** than the filing date of the present application. This situation entitles Applicants to "swear behind" Bermel et al. under 37 C.F.R. 1.131.

With particular reference to the Declaration, it is clearly demonstrated therein that Applicants successfully conceived of and actually reduced to practice the invention of Claim 4 (with particular reference to Applicants' novel ink-receiving layer) **prior to** the effective filing date of Bermel et al. (January 26, 2001). This ink receiving layer includes (as per Claim 4): (A) at least about 65% by weight of a pigment (e.g. boehmite, pseudo-boehmite, or a mixture thereof); and (B) at least one ink fixative (namely, a cationic emulsion polymer which is compatible with the pigment and avoids pigment gellation/viscosity problems when the pigment is used at the quantity level listed above). Bermel et al. was cited by the Examiner as allegedly disclosing this concept.

As explained in depth within Applicants' Declaration, the above-listed ink-receiving layer for use on a substrate in order to produce the print media product of Claim 4 was conceived of and actually reduced to practice prior to the effective filing date of Bermel et al. This is clearly and completely reflected in the Declaration and supported by laboratory notebook records attached to the Declaration and discussed therein. In particular, the Declaration effectively demonstrates that Applicants produced a completed ink receiving layer (supported by a substrate) comprising the ingredients set forth in Claim 4 (at least about 65% by weight of boehmite,

pseudo-boehmite, or a mixture thereof combined with a cationic emulsion polymer having the characteristics listed in Claim 4 including the ability to control pigment gellation and viscosity problems). Accordingly, the novel technical development of Claim 4 was invented prior to the effective filing date of Bermel et al., thereby rendering Claim 4 allowable in this case.

It is therefore strongly and respectfully submitted that Bermel et al. has been removed as a reference based on the information provided in Applicants' Declaration and, accordingly, the rejection of Claim 4 based on Bermel et al. is entirely overcome. Should the Examiner have any questions concerning the Declaration, he is invited to contact the undersigned at any time. Likewise, it is stated herein for the record that Applicants' submission of the above-described Declaration shall not constitute any admissions regarding the substantive information contained in the cited art relative to the inventions claimed in the current application other than those recited in the Declaration.

******CLAIMS 5 - 8******

Regarding Claims 5 - 8, these claims all depend on independent Claim 4 which is allowable for the reasons given above. Dependent Claims 5 - 8 are therefore equally entitled to allowance. Claim 5 indicates that the ink-receiving layer in the print media product of Claim 4 comprises about 1 - 30% by weight of the claimed cationic emulsion polymer. Claim 6 states that cationic emulsion polymer in the ink-receiving layer comprises a "quaternary amine emulsion polymer". In accordance with Claim 8, the print media product further comprises at least one additional material layer. All of these claims were rejected under 35 U.S.C. 103(a) in view of Bermel et al. which is respectfully traversed. Because Bermel et al. has been removed as a reference in this case relative to, at the very least, independent Claim 4 based on the enclosed Declaration under 37 C.F.R. 1.131, Claims 5 - 8 (which depend on Claim 4) are clearly in condition for allowance on this basis. It should also be noted that, regarding the subject matter of Claims 5 and 6 as indicated above, this subject matter likewise appears in the laboratory notebook pages associated with the Declaration. Accordingly, the particular inventions associated with dependent Claim 5 and 6 were likewise conceived of and actually reduced to practice prior to the effective filing date of Bermel et al. as outlined above in connection with Claim 4.

Regarding dependent Claim 7, this claim was rejected under 35 U.S.C. 103(a) in view of Bermel et al. combined with not less than **four** other references including: (1) U.S. Patent No. 5,804,293 to Nehmsmann et al. (hereinafter "Nehmsmann et al."); (2) U.S. Patent No. 5,270,103 to Oliver et al. (hereinafter "Oliver et al."); (3) U.S. Patent No. 6,365,264 to Darsillo et al. (hereinafter "Darsillo et al."); and (4) Published U.S. Patent Application No. 2002/0187311 to Golub et al. (hereinafter "Golub et al.") This position is strongly and respectfully traversed for a variety of reasons which will now be discussed.

First, Claim 7 depends on Claim 4 which is clearly allowable for the reasons given above. Specifically, the Bermel et al. patent has been eliminated as a reference relative to Claim 4 based on the above-cited Declaration under 37 U.S.C. 1.131. Because Claim 4 is allowable on this basis, Claim 7 (which depends on Claim 4) is equally entitled to allowance for this reason alone. However, Claim 7 is independently allowable since the unique invention that it covers is neither disclosed nor suggested by the cited art.

Claim 7 involves a print media product having an ink-receiving layer supported by a substrate. The ink-receiving layer is made from a very distinctive combination of not less than **five** ingredients, namely: (1) a "cationic emulsion polymer"; (2) a pigment selected from the group consisting of boehmite, pseudo-boehmite, and a mixture thereof; (3) a "first binder composition" comprised of polyvinyl alcohol; (4) a "second binder composition" comprised of a poly(vinyl acetate-ethylene) copolymer; and (5) and a "third binder composition" comprised of a poly(vinyl pyrrolidone-vinyl acetate) copolymer. The print media product of Claim 7 therefore employs a very distinctive combination of multiple ingredients which is **totally missing** from the cited art. This is especially true regarding the "triple binder formulation" set forth in Claim 7 which involves a mixture of polyvinyl alcohol, a poly(vinyl acetate-ethylene) copolymer, and a poly(vinyl pyrrolidone-vinyl acetate) copolymer. This concept (namely, combining all three of the foregoing binders in one layer) is novel in and of itself. Likewise, it is even more distinctive when further combined with the claimed cationic emulsion polymer and pigment (boehmite, pseudo-boehmite, or a mixture thereof) which is covered by dependent Claim 7.

The references cited in this case individually disclose bits and pieces of the claimed invention with no suggestion that they could or should be combined to yield the novel product of Claim 7. In the current Office Action, the Examiner has cited not less than **five** references against Claim 7 as previously stated. In accordance with applicable law as defined in Ecolochem

Inc. v. Southern California Edison Co., 56 USPQ 2d 1065 (Fed. Cir. 2000), it is a **requirement** that cited references **must** contain a teaching or motivation that they could or should be combined. In the current situation, there is absolutely no showing, suggestion, or motivation to combine the technology disclosed in Bermel et al., Nehmsmann et al., Oliver et al., Darsillo et al., and Golub et al. to yield the multi-ingredient product of Claim 7. Specifically, it is Applicants' view that if it takes five references to reject an invention under 35 U.S.C. 103(a), then the invention of concern simply cannot be considered obvious. Any decision to the contrary would involve the application of hindsight which cannot be used to reject an invention under 35 U.S.C. 103(a). Accordingly, Claim 7 cannot be considered obvious under the doctrine established in Ecolochem (and a number of other cases as discussed below relative to new Claim 22), with Claim 7 being independently allowable under all applicable guidelines.

As a further point of information regarding Golub et al., it is strongly and respectfully submitted that this reference is **not prior art** in the current situation and, accordingly, has no bearing on Claim 7 (or any other claims in this case). The Golub et al. reference has a U.S. filing date (no priority claimed) of **4/12/02**, with the filing date of the present application being **8/30/01**. Applicants' filing date substantially precedes the filing date of Golub et al., thereby eliminating it as prior art.

III. NEW CLAIM 22

New Claim 22 has been added as stated above. This claim covers a unique development which is clearly entitled to patent protection. Claim 22 is highly detailed, specific, and encompasses a preferred embodiment of Applicants' novel print media product which is distinguishable over the cited art under all applicable guidelines. Claim 22 specifically includes the following elements:

(1) a substrate; and

(2) an "ink-receiving layer" which comprises:

[i] at least one pigment selected from the group consisting of boehmite, pseudo-boehmite, and a mixture thereof, with the pigment being present in an amount equal to at least about 65% by weight of the ink-receiving layer;

[ii] at least one "ink fixative" which involves not just any type of ink fixing compound but instead encompasses a "quaternary amine emulsion polymer". This material is compatible with the pigment in order to avoid "inducement of gellation and increases in viscosity". By using this particular fixative, the pigment quantity of "at least about 65% by weight" can be employed without the difficulties mentioned above. Furthermore, Claim 22 indicates that the ink-receiving layer comprises about 1 - 30% by weight of the quaternary amine emulsion polymer; and

[iii] a plurality of binders comprising polyvinyl alcohol, a poly(vinyl acetate-ethylene) copolymer, and a poly(vinyl pyrrolidone-vinyl acetate) copolymer.

As stated above, new Claim 22 is highly detailed and covers the foregoing invention in a very specific manner. For example, it does not simply recite a "cationic emulsion polymer" in general, but instead indicates that a "quaternary amine emulsion polymer" is employed at a 1 - 30% by weight level. Regarding the pigment, Claim 22 specifies that it is used in a quantity not less than about 65% by weight. Finally, with respect to the binders, three specially-selected binder compositions are employed by Applicants to create a unique "triple binder formulation". The specific identification and selection of the three binders recited above, followed by the combination of these materials to produce Applicants' "triple binder formulation" is neither disclosed nor suggested by the cited art. Likewise, this distinctive binder mixture combined with the other ingredients and parameters recited in Claim 22 (including the quaternary amine emulsion polymer and pigment at the above-stated quantity levels) is even more far-removed from the cited art which does not even remotely disclose or suggest this totally novel development. Accordingly, new Claim 22 is clearly allowable under all applicable standards of review.

Regarding the allowability of Claim 22, it should first be noted that this claim is entitled to approval for the same reasons given above in connection with Claim 4 relative to the enclosed Declaration under 37 C.F.R. 1.131. In accordance with the Declaration, Bermel et al. has been removed as a reference involving, at the very least, the core-concept of Claim 22 (namely, the subject matter associated with Claim 4 which appears in its entirety in Claim 22).

However, Claim 22 is independently allowable over the cited art which entirely lacks the claimed invention. The cited references contain absolutely no motivation or suggestion that they could or should be combined, with such a motivation or suggestion being absolutely required when rejecting a claim under 35 U.S.C. 103(a) as outlined below.

All of the patents cited in the present application (Bermel et al., Nehmsmann et al., Oliver et al., Darsillo et al., and Golub et al. [see our comments above involving the inapplicability of Golub et al. as a reference]) disclose a vast quantity of chemical agents. Many thousands of possible ingredient combinations may be derived from these documents when considered collectively. To conclude that the specific invention of Claim 22 is somehow "obvious" based on these references would require a selection of the present invention from the huge number of possible ingredients in the cited art, along with the piecing together of multiple documents and a significant degree of extrapolation. This approach is entirely contradictory to applicable guidelines established by the CAFC and recited in the MPEP. These guidelines clearly prohibit the combining of multiple references without some concrete disclosure or suggestion in the documents themselves to do so.

The particular ingredients employed in the ink-receiving layer of Claim 22 include the following materials:

1. **The Pigment** - Claim 22 indicates that the pigment involves boehmite, pseudo-boehmite, or a mixture thereof as discussed on Page 43 of the Specification (lines 8 - 25). These materials were specifically selected over other compounds for numerous important reasons including "their high porosity (which aids in rapid drying of the printed image), small particle size (in order to readily achieve desired levels of gloss and gloss-control), dispersion-stability (which assists in the overall manufacturing process), and relative transparency (to improve color saturation in connection with the printed image)." (See Page 43 [lines 21 - 25] of the Specification). In addition, Claim 22 states that the pigment is present in a clearly stated amount, namely, "at least about 65% by weight". This quantity was not just selected at random, but instead enables the foregoing benefits to be achieved in a highly effective manner.

2. **The Cationic Emulsion Polymer** - In the ink-receiving layer of Claim 22, not just any cationic emulsion polymer is recited. Instead, a very specific compound is listed,

namely, a "quaternary amine emulsion polymer". Likewise, it is not present in just any amount, but in a quantity equal to about 1 - 30% by weight of the ink-receiving layer. The quaternary amine emulsion polymer is discussed in the Specification on Page 61 (lines 7 - 26).

Claim 22 likewise states that the quaternary amine emulsion polymer must be of a particular type that is able to provide certain benefits. Specifically, it must be compatible with the high pigment levels recited in Claim 22 (namely, at least about 65% by weight) while, at the same time, avoiding pigment gellation and viscosity problems. In particular, Claim 22 indicates that the claimed quaternary amine emulsion polymer is of a type that "substantially avoids inducement of gellation and increases in viscosity of said material [the pigment] so that said ink-receiving layer may be comprised of at least about 65% by weight of said material". Thus, not just any quaternary amine emulsion polymer is employed in the claimed formulation. Instead, one is used having the capabilities listed above. Representative examples of compositions falling within this category are provided in the Specification on Page 61 (lines 1 - 20) with particular (but not necessarily exclusive) reference to the "Primal® PR-26" product.

3. **The Binder Mixture** - This feature of Claim 22 is sufficiently novel to warrant patent protection in and of itself. Specifically (and as briefly discussed above in connection with Claim 7), Applicants have combined **three very specific binders** in the ink-receiving layer in order to yield a structure which offers many important benefits. This unique "triple binder formulation" was carefully chosen by Applicants from a vast amount of possible binder materials, thereby overcoming any argument that the claimed invention is merely "obvious". This "triple binder formulation" employs the following compounds:

(A) **Polyvinyl alcohol** - (See Page 48 [lines 18 - 30] and Page 49 [lines 1 - 21], with this section of the present application indicating that the foregoing material was explicitly selected based on its ability to "provide a high degree of binding strength, color accuracy, and bleed control as well as improved color gamut");

(B) **A poly(vinyl acetate-ethylene) copolymer** - (See Page 49 [lines 23 - 30] and Page 50 [lines 1 - 16], with this section of the present application stating that the foregoing material was specifically chosen based on its ability to "provide improved levels of binding

strength, water durability, and coalescence reduction/control"); and

(C) **A poly(vinyl pyrrolidone-vinyl acetate) copolymer** (See Page 50 [lines 18 - 30] and Page 51 [lines 1 - 11], with this section of the present application explaining that the foregoing material was intentionally selected based on its ability to "provide an improved color gamut, better bleed performance, and greater color accuracy".)

It is therefore self-evident that Applicants' "triple binder formulation" is entirely distinctive and novel. This formulation involves an important inventive concept in accordance with its ability to function effectively as a whole while permitting each individual binder to contribute the respective benefits set forth above. As outlined below, the cited art does not disclose or suggest an intentional combination of the three binders listed in Claim 22. Likewise, a combination of Applicants' binder mixture with the claimed quaternary amine emulsion polymer and the pigment at the designated quantity levels is also missing from the cited patents.

With continued reference to the current Office Action, the Examiner admitted on Page 5 (Paragraph 7) that the primary cited reference (Bermel et al.) does not disclose the binder mixture set forth in Claim 22. Regarding the other cited references, both Nehmsmann et al. and Oliver et al. lack any disclosure of a poly(vinyl acetate-ethylene) copolymer for use as a binder or for any other purpose. Furthermore, these references do not contain any suggestion that polyvinyl alcohol should be combined with a poly(vinyl pyrrolidone-vinyl acetate) copolymer and a poly(vinyl acetate-ethylene) copolymer to produce Applicants' novel mixture. A similar argument exists regarding Darsillo et al. which does not disclose the use of a poly(vinyl pyrrolidone-vinyl acetate) composition for any purpose (as a binder or otherwise). Likewise, nothing is mentioned in Darsillo et al. about a combination of polyvinyl alcohol, a poly(vinyl pyrrolidone-ethylene) copolymer, and a poly(vinyl pyrrolidone-vinyl acetate) copolymer. Finally, with respect to Golub et al., it is again noted that this reference does not constitute prior art in the present case. However, Golub et al. merely provides a large list of possible binders (many dozens) and does not even remotely suggest that the three binders recited above be intentionally combined to yield Applicants' novel "triple binder formulation".

It is therefore self-evident that the invention of Claim 22 is not even remotely suggested by the art of record in this case. This situation not only applies to Applicants' specialized binder

mixture (which is patentable in and of itself), but to the entire ink-receiving layer as a whole which includes the binder mixture combined with: (1) about 1 - 30% by weight of a quaternary amine emulsion polymer; and (2) not less than about 65% by weight of boehmite, pseudo-boehmite, or a mixture thereof used as a pigment. This development is of considerable importance and cannot be considered obvious, with any decision to the contrary being non-compliant with applicable non-obviousness guidelines. In particular, there is no motivation or suggestion in any of the cited references that they could or should be combined to create the invention of Claim 22. To combine these references would involve an incredible degree of speculation, conjecture, and extrapolation especially since they each recite a vast multitude of chemical compounds. This degree of speculation, conjecture, and extrapolation is simply too great to support a rejection under 35 U.S.C. 103(a).

The non-obviousness of Claim 22 is clearly supported by applicable case law. Specifically, there must be something in the teachings of cited references to suggest to an individual skilled in the art that a claimed invention would be obvious. W. L. Gore and Associates Inc. v. Garlock, Inc., 220 USPQ 303 (Fed. Cir. 1983). Likewise, the requirement that a **concrete suggestion** of the invention be present in the cited art for a proper obviousness rejection to be made is even further supported by C.R. Bard Inc. v. M3 Systems Inc., 48 USPQ 2d 1225 (Fed. Cir. 1998). This case involved an allegation that a particular medical needle apparatus was merely a product of "obvious modifications" to a prior needle assembly. The CAFC disagreed and stated that the claimed invention was neither suggested nor taught by the prior art, and further indicated that such a **"suggestion or teaching must come from the prior art"** itself. 48 USPQ 2d at 1232 - emphasis added. The CAFC also concluded that the requisite suggestion or teaching was so important that, in its absence, the claimed invention could not have been obvious. According to the court, "Absent this essential evidentiary component of an obviousness holding, as a matter of law the verdicts of invalidity on that ground cannot stand. Consequently, the judgment of invalidity based on obviousness is reversed." 48 USPQ 2d at 1232.

Also of great importance as mentioned above is the case of Ecolochem Inc. v. Southern California Edison Co., 56 USPQ 2d 1065 (Fed. Cir. 2000) which includes a highly relevant holding that must be considered in the current situation. Basically, the Ecolochem case made the following statement involving obviousness determinations which is entirely applicable to the

present situation regarding a combination of the cited references:

Our case law makes clear that the best defense against hindsight-based obviousness analysis is the **rigorous application of the requirement for a showing of a teaching or motivation to combine the prior art references.** (emphasis added - 56 USPQ 2d at 1073).

Finally, support for the allowbility of Claim 22 is further provided by the MPEP. With reference to MPEP Section 2143.01 (entitled "Suggestion or Motivation To Modify the References"), it is first indicated that "The level of skill in the art cannot be relied upon to provide the suggestion to combine references" (citing Al-Site Corp. v. VSI Int'l Inc., 50 USPQ 2d 1161 [Fed. Cir. 1999]). Instead, the applicable prior art must **suggest** the desirability of the claimed invention. This was confirmed in In re Rouffet, 47 USPQ 2d 1453 (Fed. Cir. 1998) which is cited in the above-mentioned MPEP section and generally held that, even if a combination of the references teaches every element of a claimed invention, an argument that the claimed invention is prima facie obvious **without a motivation to combine** the references is **improper**. In the current situation, there is absolutely no showing, suggestion, or motivation to combine the technology disclosed in Bermel et al., Nehmsmann et al., Oliver et al., Darsillo et al., and Golub et al. to produce the invention of Claim 22. Instead, they simply represent independent disclosures having no legal relationship to each other. On this basis, Claim 22 cannot be considered obvious and is allowable.

Conclusions

For the reasons given above, original Claims 4 - 8 and new Claim 22 are clearly entitled to patent protection and favorable consideration of these claims is respectfully requested. Should the Examiner have any questions involving the information provided above, he is invited to contact the undersigned at any time.

Respectfully submitted,

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